



ESRF

Experimental title:
Refl-EXAFS dichroism at the niobium edge of the niobium diselenide compound

Experiment number: SI136

Beamline:
CRG-IF

Date of experiment:
from 4-10-95 to:6-10-95

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Shifts:
9

Local contact:

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Report.

The aim of our proposal was to study the local structure of the dichalcogenide layered compound NbSe_2 by reflEXAFS. In details we wanted to use the X-ray linear polarisation to found the in plane and out of plane first and second neighbors numbers and distances. The layered transition metal dichalcogenides give origin to intercalated compound by insertion of metals or molecules, and the reflEXAFS measurements could be suitable to determine the intercalation site. At the same time, our aim was also to test the feasibility of reflEXAFS on the CRG-IF beam line, for the future implementation of SEXAFS in UHV conditions in the SUV hutch.

The first 6 runs has been dedicated to experimental set-up, to align the diffractometer and the sample. The energy range (18.8- 19.8 Kev) oblige to work at an incidence angle on the surface sample of 0.125° for total reflection. To illuminate a sample region with a negligible curvature compared to this angle we had to use a lateral beam size of 4 microns. In partially focused beam we had a good signal to noise ratio.

The figure shows some of the reflEXAFS spectra obtained in the last 3 runs. Despite the observation of some EXAFS oscillations, the beam is not stable enough to obtain a proper result, as can be seen from the spurious peaks that differentiate the spectra.

From these measurements we have estimated in 20-30 microns the minimum beam size to obtain repeatable spectra of such a kind on IF, the sample useful area and the critical angle for reflectivity had to allow the experiment in this condition.

